Attachment 1

Assessment of
Hazardous Chemical Management
at the
Rocky Flats Environmental Technology Site

August 1, 1997

Assessment Team

Concurrence: Concurred by e:mail on 7/31/97
Anthony Takacs
DOE Portsmouth Site Office

Concurrence: David Nickless 8/1/97
David Nickless
DOE Rocky Flats Field Office

Concurrence: 8/1/97
Milton Haas
Senior Advisor
DOE Headquarters (EH-34)

Approved: 8/1/97
Scott Rogers
Team Leader
DOE Rocky Flats Field Office

TABLE OF CONTENTS

1.0 Introduction

From July 14 to 18, 1997, the DOE Rocky Flats Field Office (RFFO) conducted an assessment of Hazardous Chemical Management by its contractors and sub-contractors at the Rocky Flats Environmental Technology Site (RFETS). The assessment was in response to the May 14, 1997, chemical explosion at Hanford's Plutonium Finishing Plant. On May 22, 1997, the DOE Headquarters Office of Environment Safety and Health issued a Safety Alert (#97-1) which alerted the DOE complex to the Hanford chemical explosion and recommended that Operations Offices assess their chemical vulnerabilities and the implications of the Hanford explosion.

2.0 Background on Explosion at Hanford

On May 14, 1997, a chemical explosion occurred in a 400-gallon, chemical-makeup tank at Hanford's Plutonium Reclamation Facility (PRF). PRF is an inactive plutonium processing facility that last operated in 1987. The explosion occurred when a solution of hydroxylamine nitrate (HAN) and nitric acid (HNO3) spontaneously reacted causing the bolted 4-foot diameter lid to be blown off the tank. This solution was to be used as a reducing agent in a solvent extraction process in support of resumption of PRF operations in 1993. The cause of the explosion was that the HAN/nitric acid mixture was allowed to concentrate, through evaporation, over the last 4 years. No injuries resulted from the explosion. However, there was a significant amount of damage to equipment and the room. The Richland Operations Office initiated a Type B investigation in response to the explosion.

3.0 Scope and Objectives

The scope of this assessment included all areas and aspects related to themanagement of hazardous chemical inventories on site. Specifically, the assessment covered three major areas:

- Status of contractor corrective actions in response to the DOE Chemical Vulnerability Assessment
- Management of hazardous chemical inventories on Site including process and waste chemicals
- Response to explosion at Hanford's Plutonium Finishing Plant (PFP)

The objectives of the assessment were to:

- Determine closure or progress toward closure of issues identified in the DOE Chemical Vulnerability Assessment of 1994 (objective CVA-1).

- Ensure programmatic ownership exists within one, centralized organization for site-wide management of hazardous chemical inventories (objective CIM-1).

- Verify hazardous process and reagent chemicals are maintained in a safe status (objective CIM-2).

- Verify hazardous waste chemicals are dispositioned in a safe and timely manner (objective CIM-3).

- Verify adequacy of contractor actions in response to the explosion that occurred at Hanford's Plutonium Finishing Plant (PFP) on May 14, 1997 (objective PFP-1).

A copy of the assessmentplan is provided in Appendix A.

4.0 Team Composition

Members of the assessment team were selected on the basis of technical expertise, assessment experience, and knowledge of specific disciplines. These individuals are familiar with assessment methodology and sufficiently knowledgeable to conduct interviews, observe in-progress activities, and perform walkdowns of facility systems and equipment.

Scott Rogers, Team Leader, DOE RFFO
Milton Haas, Senior Advisor, DOE-HQ
Dave Nickless, DOE RFFO
Tony Takacs, DOE Portsmouth Site Office

Biographical sketches of team members are provided in Appendix B.

5.0 Methodology

5.1Overview

The assessment team held an in-brief on July 14, 1997 with Kaiser-Hill (K-H), the RFETS integrating contractor. The in-brief served to introduce key, contractor personnel to the assessment team and to discuss the assessment schedule. K-H prepared a daily schedule of team activities that included interviews, briefings, buildings tours, and activity observations. The assessment team held a daily meeting to discuss issues, observations and findings. A representative from K-H attended each of these meetings.

The assessment team documented their objectives, criteria, approach, results and conclusions on standard assessment forms. The use of these forms is discussed further in Section 5.4. Copies of completed assessment forms are provided in Appendix C. All forms, including observations and findings, were provided to K-H for information on July 18, 1997.

On July 18, 1997, the assessment team leader briefed RFFO, K-H, and subcontractor senior management on the assessment results and conclusions. During the briefing, the team leader informed K-H that a formal assessment report would be issued August 1, 1997, and that K-H would have two weeks to provide comments on the factual accuracy of issues, observations, and findings documented by the assessment team. Attendance at the out-brief included the Assistant Manager for Environmental Compliance, Deputy Assistant Manager for Nuclear Material Stabilization & Disposition, Division Director for Engineering Support (all from RFFO); Vice President for Environmental Management & Compliance and Deputy Director for Safety Systems & Engineering (both K-H); and representatives from each of the subcontractors involved with hazardous chemical management (Safe Sites of Colorado, Rocky Mountain Remediation Services, and DynCorp). A separate briefing for the RFFO Deputy Manager for Technical Programs was held on July 22, 1997.

5.2Objectives, Criteria, and Approach

For each of the five objectives listed in Section 3.0 of this report, the assessment team developed review criteria and an approach for verifying each of these criteria. The criteria were based on federal regulations, DOE orders, industry standards, and site plans & procedures. The criteria focused on the site wide

management of hazardous chemicals and wastes, and the site responses to the 1994 DOE Chemical Vulnerability Assessment and the 1997 chemical explosion at Hanford. From these criteria, an approach was developed to ensure proper review and verification of each objective. The assessment covered several activities under each objective. These activities included document reviews, interviews, facility tours, and observation of work activities.

5.3 Document Reviews, Facility Walkdowns and Interviews

The assessment team reviewed numerous documents including: RFETS Health and Safety Practices Manual, RFETS 1996 Tier II Report Chemical Listing RFETS Plan for Management and Disposal of Potentially Explosive Chemicals, Material Safety Data Sheets, subcontractor chemical management plans, correspondence between K-H and sub-contractors on the Hanford explosion, and chemical management databases.

The assessment team interviewed several contractor personnel including: K-H Division Manager for Compliance and Performance Assurance; K-H Chemical Life-Cycle Program Manager; Chemical Control Administrators for Buildings 331, 551, 559, 771/774, 371/374, and 776/777; K-H Manager for Waste Chemical Removal Project; K-H Manager for Environmental Compliance Assessment; subcontractor managers responsible for chemical management and facility D&D.

The assessment team toured RCRA Storage Unit 1 and Buildings 130, 331, 551, 559, 771, 371, 374, 776, 777, 444, and 891. The team also observed routine operations in these facilities including the identification, tracking and disposition of hazardous chemicals. Tours included review of process and waste tanks as well as hazardous chemicals stored in cargo containers.

5.4 Assessment Forms

Assessment forms (Form 1's) were used to document the facts and conclusions of the assessment team for each of the assessment objectives (See Section 3.0 of this report). There was a total of five Form 1's, one for each assessment objective. These were numbered as follows: CVA-1, CIM-1, CIM-2, CIM-3, and PFP-1. The team documented three findings and one observation on assessment Form 2's. These are findings CIM-1.1, CIM-2.1 and CVA-1.1 and observation PFP-1.1. All assessment forms were provided to K-H for information on July 18, 1997. Appendix C includes copies of all assessment forms.

6.0 Results

6.1 Response to DOE Chemical Vulnerability Assessment (CVA-1)

The DOE Chemical Vulnerability Assessment of 1994 identified 5 site-specific vulnerabilities at RFETS. These were: 1) A lack of accurate and complete chemical inventories which impedes the effective analysis of hazards posed to workers, 2) the fact that chemical hazards receive less precedence and management attention than radiation hazards, 3) the fact that chemical hazards receive less precedence and management attention than RCRA requirements, 4) that deterioration of facility physical condition has the potential to create chemical safety hazards, and 5) that decisions on budget content and priorities delay correction of known chemical safety vulnerabilities.

Although none of these vulnerabilities required immediate action, the site contractor was required to develop an initial response, which was generated in September 1994 by the previous site contractor, EG&G. This plan was not transitioned to the new integrating management contractor, Kaiser-Hill.

Even though K-H and DOE have not followed through to ensure that corrective actions were takenmany of the contractors currentand planned activities address these vulnerabilities. These are discussed further in Sections 6.2, 6.3, and 6.4 of this report. However, since all review criteria had not been met, a finding (CVA-1.1) was determined based on an incomplete site response to the DOE Chemical Vulnerability Assessment.

6.2 Site-wide Management of Chemicals (CIM-1)

In February 1997, K-H upgraded the site system to track the procurement, storage, and disposal of chemicals. This system is known as the Integrated Chemical Management System (ICMS) Changes to the system allowed K-H to better integrate the management of chemicals across the site All facilities are currently using the ICMS. Some minor discrepancies were noted in the implementation of the ICMS. In order to improve the integration of chemical management across the site, K-H has drafted the RFETS Chemical Management Manual. The Draft Manual includes requirements for ICMS use, reactive chemical management, spill reporting, and chemical procurement, storage and disposal. K-H anticipates issuing this Manual in September 1997.

The assessment team evaluated K-H's chemical safety assessment program.Based on discussions with the K-H Manager for Environmental Compliance Assessment, K-H performed a baseline assessment of chemical safety management from September to October of 1996. However, tis assessment team was not provided copies of the K-H chemical safety management assessment report onny transmittal documentation directing subcontractors to take corrective action. The assessment team's access to this report was denied because K-H had declared this document to be attorney-client privileged (with the concurrence of DOE counsel). Since K-H's program could not be verified, afinding (CIM-1.1) was determined based on inadequate demonstration of the existence of a site-wide program to assess chemical safety management.

6.3 Control of Process Chemicals (CIM-2)

The assessment team reviewed site procedures and methods for procuring, receiving, and inventorying hazardous chemicals purchased for use on site. The site has generated a list of restricted chemicals that is used to control the procurement of hazardous chemicals. Procurement of hazardous chemicals requires approval of the buildings chemical control administrator (CCA) and industrial hygiene. Once received on site, the chemical is verified against a purchase order by Receiving then delivered to either the site warehouse (B-551) or directly to the user building where it is bar coded and entered into the ICMS by the CCA. The CCAs conduct annual inventories of all hazardous process and reagent chemicals in their buildings. Periodic inventories are used to verify and update the ICMS data base. The assessment team spot checked several containers of chemicals found in buildings against the ICMS. The assessment teams found that ICMS inventories are generally accurate with the exception of some waste chemicals.

MSDSs for chemicals are generally available to the CCAs. Some CCAs maintain compete sets of MSDSs for each chemical in their building. Others have only some MSDSs, but these CCAs were able to demonstrate the ability to obtain copies in a timely manner throughthe ICMS or the Internet

During facility tours, assessment team members noticed thatsome chemicals did not display the product name, health hazard warning, or bothas required by the OSHA Hazard Communication Standard (29CFR1910.1200). Some examples of this were containers of hydrochloric acid, hydrofluoric acid,and nitric acid. The assessment team also reviewed several site procedures including those on hazard communication, and toxic chemical and carcinogen control. Some deficiencies were noted in the implementation and adequacy of these procedures. A finding (CIM-2.1) was determined based on these deficiencies

6.4 Disposition of Waste Chemicals (CIM-3)

Kaiser-Hill estimates that there are approximately75,000 containers of waste chemicalsremaining on site (down from 100,000 containers a year ago) These containers vary in size from small cans to 55 gallon drums. The inventory of waste chemicals include industrial paints and adhesives to laboratory and process chemicals. K-H has developed a plan for segregating, packaging and disposing of these chemicals by December of 1999. K-H has nearly completed the first group of buildingsin the plan.

In order to address more urgent risks associated with waste chemicals that are potentially reactive or explosive, K-H has implemented a program to identifyand disposition these chemicals. This program covers chemicals found in individual containers, tanks, gloveboxes and cargo containers. K-H and their subcontractors have reviewedchemical inventories to identify potentially explosive chemicalson site. Once identified, these chemicals are stabilized or isolated within 5 days. K-H management has provided guidance to their subcontractors on identifying potentially explosive chemicals, such as peroxide formers, and has made subject matter experts available to assist subcontractors andto respond to potentially explosive chemicals that are found.

Waste packaged in drums on site were traditionally segregated by item description code (IDC) to preclude contact between incompatible chemicals. All remaining TRU and TRU-M waste drums on site have been vented. New waste drums are being fitted with filtered vents as they are filled. Approximately 100 LLW-M drums that were deemed to be of high risk for gas generation have also been vented.

Inconsistencies in the use of the ICMS for waste chemicals were noted.For example, Building 776/777 use the ICMS system to inventory all chemicals, including waste chemicals. Other buildings use the ICMS only for product chemicals. For buildings that do not use ICMS for waste chemicals, separate inventories will be generated to support thedisposition of waste chemicals.

All criteria associated with the site's response to the DOE Safety Alert were met. No findings were noted in this area.

6.5 Response to Hanford Explosion (PFP-1)

By June 20, 1997, the DOE-Headquarters Safety Alert 97-1 was disseminated by the Rocky Flats Field Office and by its Management and Integrating Contractor (Kaiser-Hill) via formal memoranda to it's sub-contractors. These communications also directed Kaiser-Hill to ensure that its sub-contractors take actions as prescribed by the Alert and to provide a formal response which would detail those actions and the results of those actions. All responses from site sub-contractors were received by K-H by July 9, 1997.

The site originally found 15 unopened containers (105 gallons total) of HAN which had been procured for use as a reducing agent in the oxalate precipitation process. That process was recently abandoned at which point there was no further use for the HAN. All 15 containers were disposed of off-site as waste on June 20, 1997. During the week of the assessment, K-H found an additional gallon of HAN on site which was used as a laboratory reagent chemical. K-H intends to dispose of this material as waste. RFETS has not historically used HAN as a process chemical. It has had limited use in research and development and as a laboratory reagent. Based on this fact and following the database searches and walkdowns conducted, the assessment team concluded that it is highly improbable that unstable HAN or HAN mixtures are present on site.

The site also reviewed findings relative to the DOE Tomsk II report for the Rocky Flats Plant dated June 21, 1994. This report reiterated the concern over nitrated ion exchange resin in Building 771, which is currently being processed by cement fixation on site. A second potential issue identified in the report was the storage of nitrated organic wastes in Building 771. In 1994, this material had been excluded from consideration based on its small volume. The waste volume is 4 liters, significantly beneath the reporting threshold of 25 liters. Based on sample results and the low temperature of the former production process, this material is considered stable until ultimate disposal as a part of the Liquid Stabilization Program.

The site maintains a variety of lists of tanks and other containers on site. These include mixed residue, permitted, product, and idle tanks. In addition, as a part of the B-771 Closure Planning, the site is in the process of thoroughly characterizing the tanks, gloveboxes, piping and ductwork in the former production facilities. The characterization process includes identification and venting of tanks that generate hydrogen. Characterization results will feed into a single facility database to assist in the closure process.

All criteria associated with the site's response to the explosion at Hanford were met. No findings were noted in this area. However, one observation (PFP-1.1) was made by the assessment team. This observation noted that there are a variety of data bases used to track tanks and idle equipment on site. It would appear that the facility D&D process would be conducted more efficiently with one, integrated system for the entire site.

7.0 Conclusions

The assessment team concluded that:

- The site has taken prompt and comprehensive actions in response to the Hanford explosion and associated DOE Safety Alert
- Kaiser-Hill and its subcontractors effectively manage the procurement, storage and disposal of hazardous chemicals
- Kaiser-Hill and its subcontractors need to place more emphasis on complying with the OSHA Hazard Communication Standard and related health & safety procedures (Finding CIM-2.1)
- Kaiser-Hill should formally respond to the five site-specific (and eight complex-wide) vulnerabilities from the DOE Chemical Vulnerability Assessment of 1994 (Finding CVA-1.1)
- Kaiser-Hill should develop a process that would allow DOE assessment teams to verify the effectiveness of their safety assessment programs without compromising attorney-client privilege (Finding CIM-1.1)

Appendix A

Assessment Plan

DOE F 1325.8

United States Government

Department of Energy

Rocky Flats Field Office

memorandum

DATE: JUL 8 1997

REPLY TO ATTN OF: AME:ESD:STR:04801

SUBJECT: Rocky Flats Field Office Assessment of Chemical Vulnerabilities at the Rocky Flats Environmental Technology Site

TO: John Hill, Acting Director
Environmental Management and Compliance
Kaiser-Hill Company, L.L.C.

On May 14, 1997, a chemical explosion occurred at Hanford's Plutonium Finishing Plant (PFP). In response to this event, DOE Headquarters issued a Safety Alert recommending that DOE Operations Offices review their current status to ensure that inventories of hazardous chemicals are properly managed.

From July 14 through 18, 1997, the Assistant Manager for Engineering, Engineering Support Division, of the Rocky Flats Field Office (RFFO) will be conducting an assessment of chemical vulnerabilities at the Rocky Flats Environmental Technology Site. The scope of the assessment will include all areas and aspects related to the management of hazardous chemicals on Site. The assessment plan is attached.

Activities that may require contractor resources include building tours, interviews of key personnel, observations of on-going activities, and retrieval of related documentation. The assessment team will utilize, as much as possible, existing Site organizations already providing these services. The subject assessment will be conducted in a manner consistent with RFFO routine oversight activities or engineering evaluations, and is expected to have minimum impact on contractor operations.

Please notify other Kaiser-Hill organizations and all subcontractors performing work at the Site of this appraisal. You will also need to schedule an assessment in-brief for about an hour on the morning of July 14. The in-brief will serve to introduce key contractor personnel to the assessment team and to discuss the assessment schedule.

Questions regarding the subject may be directed to Scott Rogers of my staff at extension 6062.

David C. Lowe
Assistant Manager for Engineering

Attachment

cc w/attachment
K. Klein, DMTP, RFFO
M. Weis, AMPA, RFFO
H. Dalton, AMMSD, RFFO
J. Legare, AMEC , RFFO
R. Bennett, SUIHFD, RFFO
P.Golan, AMPPI, RFFO
G. Voorheis, K-H
W. Harding, K-H
A. Parker, K-H
C. Herring, DynCorp
R. Bacon, SSOC
J. McAnally, RMRS
M. Karol, ESD, RFFO
J. Jeffries, TAD, RFFO
T. Melberg, S&H, RFFO
J. Wienand, A&E, RFFO
R. Ahlstrand, ESD, RFFO
L. Xuan, EC, RFFO
S. MacLeod, EC, RFFO
S. Rogers, ESD, RFFO
D. Nickless, MSD, RFFO

ASSESSMENT PLAN

ID Number: 97-104-ESD-HAZ **Date:** 7/7/97

Driver: DOE/HQ Safety Alert (#97-1) dated May 22, 1997. This Safety Alert, which was issued in response to a chemical explosion at Hanford, recommends that Operations Offices assess their chemical vulnerabilities and the implications of the Hanford explosion.

Scope: The assessment will cover three major areas:

Status of contractor corrective actions in response to the DOE Chemical Vulnerability Assessment
Management of hazardous chemical inventories on Site
Plans and studies for closure of buildings address mitigation of chemical hazards

Schedule: July 14 - 18, 1997

Team Members:
Scott Rogers (Team Leader), DOE-RFFO
Milton Haas (Senior Advisor), DOE-HQ
Dave Nickless, DOE-RFFO
Tony Takacs, DOE Portsmouth Site Office

Deliverable: Assessment Report

Objectives:

DOE Chemical Vulnerability Assessment:
- ensure adequacy of contractor corrective action plan
- verify successful completion of contractor corrective actions

Hanford PFP Explosion:
- ensure that similar vulnerabilities do not exist at RFETS
- identify potentially explosive chemicals or reactive mixtures on site
- review results of contractor self-assessment(s)

Hazardous Chemical Inventory Management
- ensure periodic surveillances of chemical inventories are conducted
- verify adequacy of contractor self-assessment program
- evaluate effectiveness of management corrective action

Approach: The team will conduct the assessment through review of documents, interviews with contractor personnel, and observation of contractor activities.

Interviews:
- K-H management
- SSOC management
- RMRS management
- DynCorp management
- Radian management (shock sensitive & explosive waste chemicals)

Documents:
- contractor self-assessment reports including those in response to PFP explosion
- routine chemical inventory reports

ORPS reports
chemical surveillances
DOE Chemical Vulnerability Assessment Report
contractor corrective action plans for Vulnerability Assessment and PFP explosion
contractor procedures and plans for the management of hazardous chemicals
MSDSs for hazardous chemicals on site
plans for tank disposition

Observations:

contractor inventory and surveillance
receipt and inspection of hazardous chemicals
labeling of tanks and containers
posting/availability of MSDSs in facilities
disposal of hazardous chemical wastes
use of the Integrated Chemical Management System (ICMS)

Appendix B

Assessment Team Members

Scott Rogers -- DOE Rocky Flats Field Office

Mr. Rogers is a Senior Chemical Process Engineer with the Department of Energy, Rocky Flats Field Office where he is involved with the design and operational performance of several site projects for the treatment and stabilization of special nuclear materials. Mr. Rogers began his engineering career with the Office of Naval Reactors (NE-60) where he held various positions contributing to the design, operation and maintenance of Naval nuclear propulsion systems. He was also responsible for the emergency planning, radioactive material transportation, and radiological control programs at Naval Reactors and periodically participated in reactor safeguard examinations of Navy nuclear-powered ships to determine readiness for operations. In 1992, Mr. Rogers joined the Office of Environmental Management (EM-25) as the EM Radiological Control Program Advisor where he reported directly to the Assistant Secretary on implementation of radiological control requirements at EM facilities across the country. Before leaving EM, he held the position of Operations Team Leader (EM-4). In this capacity, he was charged with upgrading EM operational safety performance. During his tenure at EM, he led and participated in assessments of at a variety of EM facilities including the Idaho Chemical Processing Plant (ICPP), UO3 and B Plants at Hanford, and Building 771 at Rocky Flats. Mr. Rogers holds a B.S. in Chemical Engineering from the University of Colorado and an M.S. in Environmental Engineering from Virginia Polytechnic Institute. He is also a graduate of the Bettis Reactor Engineering School and a Licensed Professional Engineer.

Milton Haas -- DOE Headquarters (EH-34)

Mr. Haas is a chemical engineer who began his career in 1960 as a leadman with the Coors Porcelain Company where enriched urania-berylia fuel elements were fabricated for the Tory II-C reactor, a part of Project Pluto. In addition to his operations responsibilities, he was designated as a nuclear criticality safety inspector. He subsequently joined the Chemical Engineering Division at Argonne National Laboratory and performed bench scale development in support of the fluidized-bed fluoride volatility reprocessing of reactor fuels. In 1973 Mr. Haas transferred to the EBR-II Project at Argonne West where initially he was special Projects Engineer for the restart of the Argonne Fuel Fabrication Line. Later, he led the driver fuel assembly group. At Los Alamos he participated in the shutdown of plutonium operations at DP West and the startup of aqueous plutonium/americium recovery operations and R&D at TA-55. Mr. Haas ultimately became the group leader of MST-12 (Nuclear Materials Process Technology), responsible for all aqueous plutonium processing at TA-55 and the Enriched Uranium Recovery Operations remaining at DP West. Concurrent to this assignment, Mr. Haas served on the Los Alamos Nuclear Criticality Safety Committee. In 1985 he moved to the Rockwell Hanford Operations (later Westinghouse Hanford Co.) and served in various capacities. These included management of three analytical laboratories in the 200 Area. Then at the Plutonium Finishing Plant, he served as Engineering Manager and later as the Deputy Plant Manager. Mr. Haas also served on the Safety and Environmental Advisory Council to the President of Westinghouse

Hanford Company. Prior to joining the Department of Energy, EH-34, Mr. Haas was detailed to the Office of Facility Transition and Management, EM-60 at DOE Headquarters during 1993-1994, dedicated principally to the EM interests at Rocky Flats, and he served in the core group of the Plutonium Vulnerability Assessment as Deputy Team Leader for the Sandia and Argonne West assessments. He later co-authored the Plutonium Vulnerability Management Plan. During this past year, Mr. Haas has co-led, with Defense Programs, two Nuclear Criticality Safety Assessments of the Y-12 Plant and was designated as the deputy project leader of the HEU Vulnerability Assessment.

David Nickless -- DOE Rocky Flats Field Office

Mr. Nickless is a chemical engineer with the Department of Energy, Rocky Flats Field Office. Mr. Nickless has a Bachelors of Science in Chemical Engineering and a Masters of Science in Environmental Engineering. Also Mr. Nickless is a registered Professional Engineer in the State of Colorado and active in the American Institute Chemical Engineers. Mr. Nickless has 8 years experience in the Department of Energy related to the management of nuclear materials and their related facilities. During his tenure at the Rocky Flats Site Mr. Nickless has overseen a variety of programs including Transuranic Waste, Nuclear Materials Management, Residue Compliance and Elimination and the Deactivation of Building 886. Additionally, Mr. Nickless has experience working at the Los Alamos National Laboratory in Technical Area-55 which is the major plutonium facility at the laboratory. This experience has lead to a first hand knowledge of processes involved in the safe handling of nuclear materials as well as an understanding of the various unit operations involved in the chemical processing of plutonium. Mr. Nickless led the Site Assessment Team ES&H Highly Enriched Uranium Vulnerability Assessment at Rocky Flats and participated in the Building 886 Readiness Assessment. Most recently Mr. Nickless participated as part of the Building 371 ORR for startup of the plutonium solution process and as part of the Building 440 ORR startup as a waste storage facility

Anthony Takacs -- DOE Portsmouth Site Office

Mr. Takacs is an Industrial Hygienist/Environmental Specialist with the Department of Energy (DOE) at the Portsmouth Gaseous Diffusion Plant in Piketon, Ohio. Mr. Takacs has a B.S. in Environmental Health, an M.S. in Environmental Management and eight years professional experience in providing technical support, management oversight, policy development, and exposure monitoring for industrial hygiene, safety and health physics programs. During his tenure at the Portsmouth Site, Mr. Takacs has been responsible for oversight of numerous facilities including the X-774G Uranium Oxide and Alumina Storage Area, X-705E Oxide Conversion and X-622 Groundwater Pump and Treat Facility. This experience has led to first hand knowledge of processes for the safe handling of nuclear materials as well as an understanding of the various operations involving uranium enrichment. Mr. Takacs participated in the ES&H Highly

Enriched Uranium Vulnerability Site Assessment at the Portsmouth Gaseous Diffusion Plant and was a member of the Working Group Assessment Team at the Pantex Facility. He has conducted numerous audits of safety, industrial hygiene, health physics and environmental compliance.

Appendix C

Completed Assessment Forms

Assessment Form 1

Date: 7/14/97

Assessment Form 1 No: CIM-1
Review Area: Chemical Inventory Management
Responsible Individual: Scott Rogers

I. Performance Objective:

Ensure programmatic ownership exists within one, centralized organization for site-wide management of hazardous chemicals.

II. Review Criteria:

A Chemical Management Program exists for all of RFETS. A manager oversees this site-wide program. Ownership and responsibility for hazardous chemical inventories rests with facility line management.

Health and Safety considerations are included in the Integrated Chemical Management System (ICMS). Health and Safety Practices Manual (HSP) Chapter 9.12 has been modified to include references to existing plant procedures that address health and safety concerns for hazardous chemicals. The ICMS is integrated with those of the individual facilities.

The Chemical Management Program provides for control of hazardous chemicals entering and exiting the site. The contractor conducts periodic surveillances to track and trend changes in chemical inventories. This information is used to identify potentially hazardous conditions.

III. Approach:

The following individuals were interviewed:

1. K-H Division manager for Compliance and Performance Assurance
2. K-H Chemical Life-Cycle Program Manager
3. Building 371 Manager for Safety and Regulatory Compliance
4. Chemical Control Administrators for Buildings 331, 551, 559, 771/774, 371/374, and 776/777
5. Building 771 Regulatory and Safety Manager
6. K-H Manager for Legacy Waste Chemical Removal Project
7. Radian chemical management support staff
8. K-H Manager for Environmental Compliance Assessment

The following documents were reviewed

Assessment Form 1

Date: 7/14/97

Assessment Form 1 No: CIM-1
Review Area: Chemical Inventory Management
Responsible Individual: Scott Rogers

1. RFETS Health and Safety Practices Manual Chapter 9.12, Chemical Tracking
2. Draft RFETS Chemical Management Manual dated July 1997
3. Draft RFETS Standard Operating Procedure for the Environmental Compliance Assessment Program dated July 1997
4. RFETS 1996 Tier II Report Chemical Listing
5. K-H Environmental Regulator Contact Record dated 9/10/96
6. K-H Environmental Regulator Contact Record dated 9/12/96

The assessment team toured RCRA Storage Unit 1 and Buildings 331, 551, 559, 771, 371, 776/777, 444, and 374. The team also observed K-H and subcontractor use of the Integrated Chemical Management System (ICMS).

IV. Discussion of Results with Basis:

In February 1997, K-H began implementation of a new site-wide system to track the procurement, storage, and disposal of chemicals. This new system, known as the Integrated Chemical Management System (ICMS), allows K-H to better integrate the management of chemicals across the site. All facilities are using the ICMS. Some minor discrepancies were noted in the implementation of the ICMS. These discrepancies included: 1) differences between buildings in the tracking of waste chemicals, 2) some procured chemicals (e.g., under existing requisitions, compressed gases, and those for construction projects) are not logged into the ICMS, and 3) a lack of awareness of site restricted chemicals (3 of 6 CCAs).

In order to improve the integration of chemical management across the site, K-H has drafted the RFETS Chemical Management Manual. The Draft Manual includes requirements for ICMS use, reactive chemical management, spill reporting, and chemical procurement, storage and disposal. K-H anticipates issuing this Manual in September 1997. The Manual is designed to supplement HSP 9.12, Chemical Tracking. Although individual facilities are using the ICMS, HSP 9.12 has not been revised to reflect this.

Based on discussions with the K-H Manager for Environmental Compliance Assessment, K-H performed a baseline assessment of chemical safety management from September to October of 1996. This manager also mentioned that there will be a follow-up to the 1996 assessment once the Chemical Management Manual is issued. However, the assessment team was not provided copies of the K-H chemical safety management assessment report or transmittal memoranda directing subcontractors to take corrective action (or any other formal documentation of this nature). The

Assessment Form 1

Date: July 14, 1997

Assessment Form 1 No: CIM-2
Review Area: Chemical Inventory Management
Responsible Individual: Anthony Takacs

I. Performance Objective:

Verify hazardous process and reagent chemicals are maintained in a safe status.

II. Review Criteria:

Hazardous chemicals shipped are properly received and inspected. Procedures exist and are followed for handling and storing of hazardous chemicals.

An inventory of all hazardous process and reagent chemicals is maintained on site. Inventories are periodically conducted to ensure data base is current.

III. Approach:
(List the procedures and documents reviewed, titles of personnel interviewed, references used, and evolutions observed.)

The following individuals were interviewed:

1. Kaiser-Hill (K-H) Chemical Life-Cycle Program Manager
2. Safe Sites of Colorado, L.L.C. (SSOC) Building 371 Chemical Control Administrator (CCA)
3. SSOC Building 371 Manager for Safety and Regulatory Compliance
4. SSOC Building 771 CCA
5. SSOC Building 771 Regulatory and Safety Manager
6. Rocky Mountain Remediation Services, L.L.C. (RMRS) Building 444 CCA
7. DynCorp of Colorado, Inc. (DCI) Building 130 Stock Clerk
8. DCI Building 551 CCA
9. DCI Building 331 CCA
10. K-H Safety Professional

The following documents were reviewed:

- HSP Chapter 9.12 "Chemical Tracking"
- HSP Chapter 9.13 "Hazard Assessment Inventory"
- HSP Chapter 13.05 "Toxic Chemical Control"
- HSP Chapter 13.03 "Carcinogen Control"
- HSP Chapter 9.07 "Hazard Communication Program"
- Building 371/374 Operations Order OO-371/374-104
- Work Control Packages T0092573 and T0092832 for non-routine tasks in Building 371
- DOE Facility Representative Report # 97-SHFAD-SL-03 on Building 881 Chemical Management Non-Compliances
- 29CFR1910.1200 Hazard Communication
- DCI Standard Operating Procedure 4-P55-DCI-WOP-001 "130 Warehouse Operating Procedure"

Assessment Form 1

Date: July 14, 1997

Assessment Form 1 No: CIM-2
Review Area: Chemical Inventory Management
Responsible Individual: Anthony Takacs

- Chemical Management Plan for SSOC, dated August 1996
- SSOC Chemical Inventory Self-Assessment Report for Building 371, dated August 1996
- Draft Chemical Management Plan for RMRS, dated January 31, 1997
- Chemical Management Plan for DCI, SOP # 0806, dated August 30, 1996
- Section 01700 of K-H Construction Contract Document
- Hazardous chemical inventory reports for facilities 371, 771,444, 551, and 331
- Selected Material Safety Data Sheets (MSDS) for facilities 371, 771, 444, 551 and 331

The assessment team toured Buildings 371, 771, 130, 551, 331 and 444 to observe routine facility operations.

IV. Discussion of Results with Basis:
(Document the results of the review in sufficient detail using both the review criteria and the expectation statement as guidance.)

On July 14, 1997 discussions were held with the DCI Environmental Compliance Technical Advisor and the DCI Stock Clerk on how chemicals are received and managed in Building 130. The DCI Stock Clerk explained that once chemicals are received into the facility they are inspected for damage and compared to the Purchase Order to ensure that what was received is what was ordered. If there are discrepancies or there is damage then the chemical is not accepted. The team observed the receipt and acceptance of a 55-gallon drum of NaOH.

On July 14, 1997 a walkthrough was conducted at Building 551 concerning management of hazardous materials. The DCI CCA explained how the warehouse is operated and how chemicals are managed. All identified chemicals were properly barcoded and labeled. Also, a spot check of 2 barcoded chemicals was compared to the Integrated Chemical Management System (ICMS) database, which contained both chemicals. MSDS's were also available for these two chemicals. During this walkthrough and subsequent facility CCA interview, it was determined that chemicals that have been stocked for a long time (i.e. Non-Aerosol Hairspray) may not be undergoing an ICMS review.

On July 14, 1997 a walkthrough was conducted at Building 331 concerning management of hazardous materials. The DCI CCA explained how the garage is operated and how chemicals are managed. All identified chemicals were properly barcoded and labeled. Also a spot check of 5 barcoded chemicals was compared to the ICMS database, which contained all 5 chemicals. MSDS's were also available for all 5 chemicals.

On July 14, 1997 a K-H Safety Professional was interviewed concerning how chemicals are managed with construction sub-contractors. The Safety Professional indicated that the sub-contractor is required per Section 01700 of the Construction Contract Document to submit a list of all chemicals proposed for use on the project. The Safety Professional then reviews the list of chemicals to be brought on-site, however, the chemicals are not compared to the " Restricted" chemical list or entered into ICMS.

On July 16, 1997 discussions were held with the SSOC CCA and the SSOC Manager for Safety and Regulatory Compliance concerning Building 371 management of hazardous chemicals. The SSOC CCA explained how a new chemical would be ordered. The process is the CCA would look on the ICMS for any excess chemicals and if none found then a purchase requisition would be generated. This

Assessment Form 1

Date: July 14, 1997

Assessment Form 1 No: CIM-2
Review Area: Chemical Inventory Management
Responsible Individual: Anthony Takacs

purchase requisition would be signed by both the CCA and Industrial Hygienist (IH) and then forwarded to procurement with the ICMS attached to the purchase requisition before it got to procurement. The CCA said the "Restricted" chemical list on ICMS is compared to the new chemical purchase. The CCA barcodes the new chemical as soon as the new chemical is brought into the facility. It is then entered into ICMS. The new chemical MSDS is then filed into the Building Master MSDS files (one is located near the main entrance and a backup is located in the SSOC CCA's office). It should be noted that no Master MSDS listing is kept inside the "controlled areas". This could cause a time delay in obtaining pertinent chemical information in an emergency.

A walkthrough of the facility was conducted to ensure compliance with the OSHA Hazard Communication Standard (29CFR1910.1200). Two Potassium Hydroxide Tanks (D-841 and D-208) in Building 374 were observed in the Attic Level. Tank D-841 was not listed in the ICMS database. A spot check of 16 barcoded chemicals was compared to the ICMS database, which contained all but 2 of these (barcode # 10701 and 10971). All 14 barcoded chemicals on the ICMS have been inventoried on an annual basis. A spot check of 6 chemicals was conducted to determine if MSDS's were available for those chemicals. All 6 chemicals had a corresponding MSDS. During the building walkthrough it was discovered that some containers were not barcoded according to Building 371/374 Operations Order OO-371/374-104 Section 5.1.3 and 1-BPP-HSP-9.12 Section 4.3. Examples of this were:

Dearborn 537 (Room 2307, No Container Location for this Room)
Calcium Chloride (Container Location 524)
Zinc Chloride (Container Location 524)
Methyl Orange (Container Location 524)
Nitric Acid (Container Location 524)
Bailey Grease (Container Location 4461)
3 in 1 Household Oil (Container Location 4179)
Dyken Steel Blue (Container Location 4179)
Varsol Spray (Container Location 4179)

During this walkthrough some chemicals were identified that did not contain the product name, health hazard warning, or both. These chemicals are required to be labeled with the identity of the hazardous chemical and appropriate hazard warning according to the OSHA Hazard Communication Standard (29CFR1910.1200).
Examples of this were:

4NHCL (Container Location 524, No Name or Health Hazard Warning)
Isopropyl (Container Location 524, No Health Hazard Warning)
HF (Container Location 524, No Name or Health Hazard Warning)
50% HNO3 (Container Location 524, No Name or Health Hazard Warning)
Bailey Grease (Container Location 4461)
Barcode # 13016 (Container Location 4461, No Name or Health Hazard Warning)
HC-634 (Container Location 4179, No Health Hazard Warning)

Also, during the interview with the CCA Work Packages, Work Control # T0092573 for Paint Acid Tank and Room 3559 and Work Control # T0092832 for Paint Room 3559, were reviewed. The reviewed Work Packages were for non-routine tasks and included the MSDS's for chemicals that were part of these non-routine tasks.

On July 16, 1996 discussions were held with the SSOC CCA and the SSOC Regulatory and Safety Manager concerning Building 771 management of hazardous chemicals. The SSOC CCA explained the process for new chemical procurement, which was satisfactory and identical to the explanation

Assessment Form 1

Date: July 14, 1997

Assessment Form 1 No: CIM-2
Review Area: Chemical Inventory Management
Responsible Individual: Anthony Takacs
given above by the CCA for Building 371. It should be noted that a Master MSDS list is kept in the CCA's office as well as inside the "controlled area".

A walkthrough of the facility was conducted to ensure compliance with the OSHA Hazard Communication Standard. A spot check of 13 barcoded chemicals was compared to the ICMS database, which contained all but 1 (barcode # 206737). All 12 barcoded chemicals on the ICMS have been inventoried on an annual basis. A spot check of 10 chemicals was conducted to determine if MSDS's were available for the chemicals. All MSDS's were available. During the walkthrough all reviewed chemicals were barcoded.

During this walkthrough some chemicals were identified that did not contain the product name, health hazard warning, or both. These chemicals are required to be labeled with the identity of the hazardous chemical and appropriate hazard warning according to the OSHA Hazard Communication Standard. Examples of this were:

Barcode # 206715 (Container Location 5225, No Name or Health Hazard Warning)
CaF2 (Container Location 5225, No Name or Health Hazard Warning)
Ion Exchange Resin (Container Location 5224, No Health Hazard Warning)
Immersion Oil (Container Location 5174, No Health Hazard Warning)
Barcode # 212885 (Container Location 5178, No Name or Health Hazard Warning)

A review of Procedure # 1-15310-HSP-9.13 "Hazard Assessment Inventory" and subsequent discussions with the K-H Chemical Life-Cycle Program Manager indicated that this procedure is not being followed and has not been funded for approximately 2 years.

A review of Procedure # HSP 13.05 "Toxic Chemical Control" indicated that the procedure is not being fully implemented. Discussions with the K-H Chemical Life-Cycle Program Manager indicated that Sections 4.2.1 and 4.2.2 are not being followed. Section 4.2.1 requires IH to conduct yearly building inspection for the identification of toxic chemical hazards. Section 4.2.2 requires the Operations Managers to conduct monthly building inspections.

A review of Procedure # HSP # 13.03 "Carcinogen Control" indicated that the procedure is not being fully implemented. Discussions with the K-H Chemical Life-Cycle Program Manager indicated that Sections 4.16, 4.33, 4.3.7, and 5.3 are not being followed. Section 4.16 requires IH to maintain a log of carcinogens that were purchased for the site. Section 4.33 requires that a regulated area be established where carcinogens are used and that access to regulated areas is controlled through postings and a record of all personnel working in a regulated area be maintained. Section 4.3.7 requires that a list be submitted to Occupational Health and IH monthly on all employees actively working with carcinogens. Section 5.3 requires that an Operational Safety Analysis be written describing the use of the carcinogen and the procedures used to control exposures, and emergency actions for regulated areas. It should be noted that the DOE Facility Representative for Building 881 identified similar deficiencies in a report generated July 9,1997 (97-SHFAD-SL-03).

A review of Procedure # HSP 9.07 "Hazard Communication Program" does not meet the requirements of 29CFR1910.1200 Section (e)(1). The "Hazard Communication Program" does not include :

1. A list of the hazardous chemicals in the workplace

2. The hazards associated with chemicals contained in unlabeled pipes in the work area

Assessment Form 2

Date:7/14/97

Finding

Assessment Form 2 No.:CVA-1.1
Review Area: Chemical Vulnerability Assessment
Responsible Individual: David Nickless

I. Identification Section

The lack of a comprehensive plan in response to the Chemical Vulnerability Assessment, September 1994.

II. Basis Section

A. Description of Basis:

Chemical Safety Vulnerabilty Working Group Report, September 1994.

B. Documents reviewed, activities performed, persons contacted (titles):

1. Chemical Safety Vulnerability Working Group Report, DOE/EH-0369P, September 1994.
2. Initial Site Response Plan, Rocky Flats Plant, September 1994.
3. Informal response to site specific vulnerabilities Kaiser-Hill current status provided by Harold Wells, 7/14/97.
4. Matrix of conditions as of September 94 versus June 97 provided by Richard Bloom, SSOC.
5. Interview with Harold Wells K-H, July 14, 1997.
6. Interview with Larry Holcombe Radian Corp., July 14, 1997.
7. Interview with R. Sgrignoli, DCI, July 15, 1997.
8. Interview with S. Kibinski, RMRS, July 17, 1997.
9. Tour and walkthough of Building 559 chemical storage areas, Jul,y 16, 1997.
10. Tour and walkthrough of RCRA Unit 1 waste storage areas, July 17, 1997.
11. Tour and walkthrough of Building 891 chemical storage areas, July 17, 1997.
12. Interview with Richard Bloom SSOC, July 15, 1997.

III. Approval Section

Assessment Form 2

Date:7/14/97

Finding

Assessment Form 2 No.:CVA-1.1
Review Area: Chemical Vulnerability Assessment
Responsible Individual: David Nickless

Originator David J. Nickless Date 7/16/97

Approved Scott T. Fors Date 7/18/97

Assessment Form 1

Date: 7/14/97

Assessment Form 1 No: CVA-1
Review Area: Chemical Vulnerability Assessment
Responsible Individual: David Nickless

I. Performance Objective:

Determine closure or progress toward closure of issues identified in the DOE Chemical Vulnerability Assessment

II. Review Criteria:

The contractor's corrective action plan addresses all vulnerabilities applicable to RFETS that were identified in the DOE report. The plan includes a schedule for completion of corrective actions.

The contractor has completed or is on schedule to complete all corrective actions identified in their plan.

III. Approach:

1. Chemical Safety Vulnerability Working Group Report, DOE/EH-0369P, September 1994.
2. Initial Site Response Plan, Rocky Flats Plant, September 1994.
3. Informal response to site specific vulnerabilities Kaiser-Hill current status provided by Harold Wells, 7/14/97.
4. Matrix of conditions as of September 94 versus June 97 provided by Richard Bloom, SSOC.\
5. Interview with Harold Wells K-H, July 14, 1997.
6. Interview with Larry Holcombe Radian Corp., July 14, 1997.
7. Interview with R. Sgrignoli, DCI, July 15, 1997.
8. Interview with S. Kibinski, RMRS, July 17, 1997.
9. Tour and walkthough of Building 559 chemical storage areas, Jul,y 16, 1997.
10. Tour and walkthrough of RCRA Unit 1 waste storage areas, July 17, 1997.
11. Tour and walkthrough of Building 891 chemical storage areas, July 17, 1997.
12. Interview with Richard Bloom SSOC, July 15, 1997.

IV. Discussion of Results with Basis

Assessment Form 1

Date: 7/14/97

Assessment Form 1 No: CVA-1
Review Area: Chemical Vulnerability Assessment
Responsible Individual: David Nickless

There is no evidence of any corrective action plans that specifically address the September, 1994, Chemical Safety Vulnerability Working Group Report. There was a response generated in September 1994 by the previous site contractor, EG&G, "Initial Site Response Plan", Rocky Flats Plant. However, this plan was not transitioned to the new integrating management contractor, Kaiser-Hill. The lack of a corrective action plan is inconsistent with Kaiser-Hills actions and the Department of Energy's expectation on other vulnerability assessments (i.e. Plutonium and Highly Enriched Uranium). It appears as though both K-H and DOE have dropped the ball on this assessment. Nonetheless, despite the lack of a plan, many of the contractors current practices and planned activities will address a number of the vulnerabilities. There are five site specific and eight complex wide generic vulnerabilities listed in the September 1994, assessment. Below is a summary of the five site specific vulnerabilities and a cursurary assessment of K-H's progress.

• CSRV-RFP-000-01 Lack of accurate and complete chemical inventories impedes the effective analysis of hazards posed to workers. Kaiser-Hill has instituted a new chemical management inventory system the Integrated Chemical Management System (ICMS). The implementation of this system is the first major step forward in gaining control of the sites chemical inventory.

• CSRV-RFP-000-02 Chemical hazards are provided disproportionately less management support than radiation hazards. Kaiser-Hill is giving more management attention to chemical management than has previously occurred. Additionally, the Department of Energy is placing an emphasis on chemical management by incentivizing the contractor with fee based performance measures totaling $1,417,200.

• CSRV-RFP-000-03 RCRA requirements are given precedence over chemical safety. This assessor did not observe RCRA concerns taking precedence over chemical safety. Compliant RCRA storage complimented chemical safety.

•CSRV-RFP-000-04 Deterioration of facility physical conditions has the potential to create chemical safety hazardous. It is recognized that many of the facilities onsite are old 20 to 40+ years old and maintaining these facilities is an ongoing challenge. It is also noted that the sites mission has been more finely focused than it was in May of 1994 and the site is aiming at an accelerated closure of the site by 2006. The amount of ongoing maintenance needed on the facilities to insure chemical safety needs to be analyzed given the reality that these facilities will be decommissioned and razed.

•CSRV-RFP-000-05 Decisions on budget content and priorities delay correction of

Assessment Form 1

Date: 7/14/97

Assessment Form 1 No: CVA-1
Review Area: Chemical Vulnerability Assessment
Responsible Individual: David Nickless

known chemical safety vulnerabilities. Again in light of changing conditions at the site this issue needs a fresh look. It appears this issue is receiving significant management attention and the site is negotiating a consent order and plan to address the "legacy chemicals/waste" that have accumulated at the over its 37 year production history. This program is expected to be completed by December 1999 and is expected to cost $27 million.

Kaiser-Hill and the Department of Energy need to establish a dialogue and review both the applicability and current status of the vulnerabilities listed in the CVA. It is important that both RFFO and K-H re-engage on this activity to bring the Chemical Vulnerabilities to the same level of management attention Plutonium and Highly Enriched Uranium.

V. Conclusion:

The criteria for this objective has not been met. Kaiser-Hill nor any of its subcontractors posses a comprehensive plan that addresses the issues raised in the September 1994, Chemical Vulnerability Assessment.

Originator David J. Nickless Date 7/13/97

7/18/97

Assessment Form 2

Date:7/14/97

Finding

Assessment Form 2 No.:CVA-1.1
Review Area: Chemical Vulnerability Assessment
Responsible Individual: David Nickless

I. Identification Section

The lack of a comprehensive plan in response to the Chemical Vulnerability Assessment, September 1994.

II. Basis Section

A. Description of Basis:

Chemical Safety Vulnerabilty Working Group Report, September 1994.

B. Documents reviewed, activities performed, persons contacted (titles):

1. Chemical Safety Vulnerability Working Group Report, DOE/EH-0369P, September 1994.
2. Initial Site Response Plan, Rocky Flats Plant, September 1994.
3. Informal response to site specific vulnerabilities Kaiser-Hill current status provided by Harold Wells, 7/14/97.
4. Matrix of conditions as of September 94 versus June 97 provided by Richard Bloom, SSOC.
5. Interview with Harold Wells K-H, July 14, 1997.
6. Interview with Larry Holcombe Radian Corp., July 14, 1997.
7. Interview with R. Sgrignoli, DCI, July 15, 1997.
8. Interview with S. Kibinski, RMRS, July 17, 1997.
9. Tour and walkthough of Building 559 chemical storage areas, Jul,y 16, 1997.
10. Tour and walkthrough of RCRA Unit 1 waste storage areas, July 17, 1997.
11. Tour and walkthrough of Building 891 chemical storage areas, July 17, 1997.
12. Interview with Richard Bloom SSOC, July 15, 1997.

III. Approval Section

Assessment Form 2

Date:7/14/97

Finding

Assessment Form 2 No.:CVA-1.1
Review Area: Chemical Vulnerability Assessment
Responsible Individual: David Nickless

Originator David J. Nickless Date 7/18/97

Approved Scott T. Ford Date 7/18/97

Assessment Form 1

Date: July 14, 1997

Assessment Form 1 No: CIM-2
Review Area: Chemical Inventory Management
Responsible Individual: Anthony Takacs

3. The methods the employer will use to provide the other employer(s) on-site access to MSDS's

It should also be noted that numerous sections of the "Hazard Communication Program" are not being met. Examples of these are:

1. Section 4.1.2 requires Safety and Hygiene to maintain the Master MSDS File

2. Section 4.1.6 requires Safety and Hygiene to audit program implementation

3. Section 5.3.2 requires a Hazardous Chemical List be maintained in each Work Area MSDS File

4. Section 5.3.2.7 requires MSDS's within the Work Area MSDS File must also be in the Master MSDS File

On July 17, 1997 a facility walkthrough was conducted at the 444 Depleted Uranium Manufacturing Facility. The RMRS CCA was interviewed concerning the acquisition of new chemicals. The CCA's explanation was satisfactory and identical to the explanation given above by the CCA for Building 371.

A walkthrough of the facility was conducted to ensure compliance with the OSHA Hazard Communication Standard. A spot check of 6 barcoded chemicals was compared to the ICMS database, which contained all but 1 (barcode # 338972). A spot check of the barcoded chemicals was conducted to determine if MSDS's were available for those chemicals. All 6 chemicals had corresponding MSDS's. All chemicals identified in this walkthrough were properly barcoded and labeled. It should be noted that approximately 137 "Waste" containers have not yet been removed from this facility. These remaining chemicals are scheduled to be removed by September 1, 1997. No RMRS self-assessments for chemical management has been completed for Building 444.

V. Conclusion:
(Concluding statement based on the discussion of results. The statement should conclude whether the criteria of the objective was met. All issues should be documented on Assessment Form 2.)

Some of the criteria for this objective were not met. A finding was determined based on non-compliance's with Site Health and Safety Procedures and the OSHA Hazard Communication Standard (29CFR1910.1200).

Originator _____ Date 7-17-97

Approved _____ Date 7/17/97

Assessment Form 2
Finding

Date: 7/14/97

Assessment Form 2 No.: CIM-2.1
Review Area: Chemical Inventory Management
Responsible Individual: Anthony Takacs

I. Identification Section

Some of the criteria for this objective were not met. A finding was determined based on non-compliance's with Site Health and Safety Procedures and the OSHA Hazard Communication Standard (29CFR1910.1200).

II. Basis Section

A. Description of Basis:

During Building 371 and 771 walkthroughs some chemicals were identified that did not contain the product name, health hazard warning, or both. These chemicals are required to be labeled with the identity of the hazardous chemical and appropriate hazard warning according to the OSHA Hazard Communication Standard (29CFR1910.1200).

A review of Procedure # 1-15310-HSP-9.13 "Hazard Assessment Inventory" and subsequent discussions with the K-H Chemical Life-Cycle Program Manager indicated that this procedure is not being followed and has not been funded for approximately 2 years.

A review of Procedure # HSP 13.05 "Toxic Chemical Control" indicated that the procedure is not being fully implemented. Discussions with the K-H Chemical Life-Cycle Program Manager indicated that Sections 4.2.1 and 4.2.2 are not being followed. Section 4.2.1 requires IH to conduct yearly building inspection for the identification of toxic chemical hazards. Section 4.2.2 requires the Operations Managers to conduct monthly building inspections.

A review of Procedure # HSP # 13.03 "Carcinogen Control" indicated that the procedure is not being fully implemented. Discussions with the K-H Chemical Life-Cycle Program Manager indicated that Sections 4.16, 4.33, 4.3.7, and 5.3 are not being followed. Section 4.16 requires IH to maintain a log of carcinogens that were purchased for the site. Section 4.33 requires that a regulated area be established where carcinogens are used and that access to regulated areas is controlled through postings and a record of all personnel working in a regulated area be maintained. Section 4.3.7 requires that a list be submitted to Occupational Health and IH monthly on all employees actively working with carcinogens. Section 5.3 requires that an Operational Safety Analysis be written describing the use of the carcinogen and the procedures used to control exposures, and emergency actions for regulated areas. It should be noted that the DOE Facility Representative for Building 881 identified similar deficiencies in a report generated July 9,1997 (97-SHFAD-SL-03).

A review of Procedure # HSP 9.07 "Hazard Communication Program" does not meet the requirements of 29CFR1910.1200 Section (e)(1). It should also be noted that numerous sections of the "Hazard Communication Program" are not being met.

B. Documents reviewed, activities performed, persons contacted:

The following individuals were interviewed:

1. Kaiser-Hill (K-H) Chemical Life-Cycle Program Manager
2. Safe Sites of Colorado, L.L.C. (SSOC) Building 371 Chemical Control

Assessment Form 2
Finding

Date: 7/14/97

Assessment Form 2 No.: CIM-2.1
Review Area: Chemical Inventory Management
Responsible Individual: Anthony Takacs
Administrator (CCA)
3. SSOC Building 371 Manager for Safety and Regulatory Compliance
4. SSOC Building 771 CCA
5. SSOC Building 771 Regulatory and Safety Manager
6. Rocky Mountain Remediation Services, L.L.C. (RMRS) Building 444 CCA
7. DynCorp of Colorado, Inc. (DCI) Building 130 Stock Clerk
8. DCI Building 551 CCA
9. DCI Building 331 CCA
10. K-H Safety Professional

The following documents were reviewed:

- HSP Chapter 9.12 "Chemical Tracking"
- HSP Chapter 9.13 "Hazard Assessment Inventory"
- HSP Chapter 13.05 "Toxic Chemical Control"
- HSP Chapter 13.03 "Carcinogen Control"
- HSP Chapter 9.07 "Hazard Communication Program"
- Building 371/374 Operations Order OO-371/374-104
- Work Control Packages T0092573 and T0092832 for non-routine tasks in Building 371
- DOE Facility Representative Report # 97-SHFAD-SL-03 on Building 881 Chemical Management Non-Compliances
- 29CFR1910.1200 Hazard Communication
- DCI Standard Operating Procedure 4-P55-DCI-WOP-001 "130 Warehouse Operating Procedure"
- Chemical Management Plan for SSOC, dated August 1996
- SSOC Chemical Inventory Self-Assessment Report for Building 371, dated August 1996
- Draft Chemical Management Plan for RMRS, dated January 31, 1997
- Chemical Management Plan for DCI, SOP # 0806, dated August 30, 1996
- Section 01700 of K-H Construction Contract Document
- Hazardous chemical inventory reports for facilities 371, 771,444, 551, and 331
- Selected Material Safety Data Sheets (MSDS) for facilities 371, 771, 444, 551 and 331

The assessment team toured Buildings 371, 771, 130, 551, 331 and 444 to observe routine facility operations.

III. Approval Section

Originator [signature] Date 7-17-97

Approved [signature] Date 7/17/97

Assessment Form 1

Date: 7/14/97

Assessment Form 1 No: CIM-3
Review Area: Chemical Inventory Management
Responsible Individual: Scott Rogers

I. Performance Objective:

Verify hazardous waste chemicals are dispositioned in a safe and timely manner.

II. Review Criteria:

A site-wide program for the identification and disposal of hazardous waste chemicals exists. Priorities for disposal of waste chemicals, including tank heels, are based on associated hazards. Work in this area is proceeding on schedule and will be completed in a timely manner.

The Integrated Chemical Management System and the MSDS system are used to support the hazardous waste chemical program.

Plans for building deactivation and removal of chemical process systems and components (e.g., tanks) include consideration for chemical hazards.

III. Approach:

The following individuals were interviewed:

1. K-H Program Manager for the Waste Chemical Project
2. K-H Senior Principle Chemist responsible for Reactive Chemical Management Project
3. Chemical Control Administrators (CCAs) for Buildings 331, 551, 559, 371, 771, 776/777

The following documents were reviewed

1. K-H plan dated 5/97 Potentially Shock Sensitive/Explosive Chemical Characterization, Management, and Disposal
2. Radian Memo dated 5/19/97 on the Waste Chemical Round-up Approach
3. Draft K-H Procedure for the RFETS Environmental Compliance Assessment Program
4. MSDSs for selected waste chemicals

The assessment team toured Buildings 331, 444, 551, 559, 371/374, 771, and 776/777.

Assessment Form 1

Date: 7/14/97

Assessment Form 1 No: CIM-3
Review Area: Chemical Inventory Management
Responsible Individual: Scott Rogers

IV. Discussion of Results with Basis:

K-H estimates that there are approximately 100,000 containers of waste chemicals on site. These containers vary in size from small cans to 55 gallon drums. The inventory of waste chemicals include industrial paints and adhesives to laboratory and process chemicals. K-H intends on segregating and packaging the majority of these chemicals for disposal by December of 1999 (a.k.a the "waste chemical roundup"). The K-H plan calls for dividing the site into building clusters and completing inventories of all waste chemicals prior to removal. Direction to the subcontractors on conducting inventories was provided by Radian on 5/19/97 (reference 2). K-H has nearly completed the first group of buildings (444 cluster). Out of thousands of waste chemicals found in the 444 cluster, approximately 137 remain.

MSDSs for chemicals are generally available to the Chemical Control Administrators (CCAs). Some CCAs maintain compete sets of MSDSs for each chemical in their building. Others have only some MSDSs, but these CCAs were able to demonstrate the ability to obtain copies in a timely manner through K-H or the Internet.

Inconsistencies in the use of the ICMS for waste chemicals were noted. Some buildings, such as 776/777, use the ICMS system to inventory all chemicals, including waste chemicals. Other buildings use the ICMS only for product chemicals. For buildings that do not use ICMS for waste chemicals, a separate inventory will be generated to support the waste chemical roundup.

In order to address urgent risks associated with waste chemicals that are potentially reactive or explosive, K-H has implemented a program to identify the presence of these chemicals on site. The program covers chemicals found in individual containers, tanks, and gloveboxes. K-H and their subcontractors have reviewed inventories of chemicals on site to identify potentially explosive chemicals. Once identified, these chemicals are typically stabilized or isolated within 14 days. K-H management has provided guidance to their subcontractors on identifying potentially explosive chemicals, such as peroxide formers, and has made SMEs available to assist subcontractors and respond to potentially explosive chemicals that are found.

Non-reactive waste chemicals in operationally-empty tanks, non-operational gloveboxes, and high radiation, high contamination or airborne radioactivity areas are not included in current plans for disposal by December 1999 unless there is an "imminent safety issue" or "other relevant, significant factors." Removal of these

Assessment Form 1

Date: 7/14/97

Assessment Form 1 No: CIM-3
Review Area: Chemical Inventory Management
Responsible Individual: Scott Rogers
chemicals will be deferred until building D&D.

V. Conclusion:

The criteria for this objectives were met. No findings were noted.

Originator _____ Date 7/17/97

Approved _____ Date 7-18-97

Assessment Form 1

Date: 7-14-97

Assessment Form 1 No: PFP-1
Review Area: Plutonium Finishing Plant Explosion
Responsible Individual: Milton Haas

I. Performance Objective:

Verify adequacy of contractor actions in response to the explosion that occurred at Hanford's Plutonium Finishing Plant (PFP) on May 14, 1997.

II. Review Criteria:

All contractors responsible for management of hazardous chemicals at RFETS have reviewed the DOE Safety Alert (No. 97-1) on the Hanford PFP explosion and understand the significance of this event.

Contractors have conducted a review to identify the presence of potentially explosive mixtures of hydroxylamine nitrate and nitric acid on site.

Contractors have also investigated other potentially explosive and reactive chemicals or compounds that could form as a result of:

- corrosion product catalyzed reactions
- chemical degradation
- concentration by evaporation or other means
- inadvertent combining of incompatible chemicals
- the Tomsk nitration of organic chemicals at elevated temperatures

Idle equipment (e.g. tanks, sumps, etc.) has been evaluated to determine if potentially reactive hazardous chemicals have been disposed of and that the equipment has been drained and flushed. Where such chemicals still exist, the contractors should have ensured active safe management of those chemicals until they are disposed of.

III. Approach:
(List the procedures and documents reviewed, titles of personnel interviewed, references used, and evaluations observed.)

Discussions were held with Integrating Contractor personnel as well as sub-contractor personnel responsible for the management of hazardous chemicals to verify that the DOE Headquarters Safety Alert had been promulgated and that direction had been given to the sub-contractors to assess RFETS inventories of hazardous chemicals. Responses to those requests were reviewed for adequacy and verified to be fully documented.
Interviews were conducted with the K-H Chemical Life Cycle Program Manager, the SSOC Senior Principal Engineer for Environmental Protection, the Executive Vice President of SSOC, the DCI Environmental Manager and his Technical Advisors, the K-H Senior Management Integrator (responsible for Idle Equipment oversight), the President of RMRS (by teleconference), the K-H Vice President for Environmental Management & Compliance, the Environmental and Chemical Managers of RMRS, and SSOC managers responsible for facility Deactivation and D&D, Chemical Management, Program Management and the Mixed Residue Stabilization Program.

Assessment Form 1

Date: 7-14-97

Assessment Form 1 No: PFP-1
Review Area: Plutonium Finishing Plant Explosion
Responsible Individual: Milton Haas

Documents reviewed included;

1. Letter, Vice President Nuclear Operations K-H to President SSOC, "Review of Tanks and Storage Containers GMV-229-97", June 18, 1997.
2. Letter report, Senior Vice President/ General Manager DCI to Vice President K-H, "Tank and Storage Container Inspection CLH-282-97", July 8, 1997.
3. Letter report Sr. Principal Engineer for Environmental Protection SSOC to Executive Vice President SSOC, " Assessment of Chemical Storage and Process Tanks in response to the PFP event RFB-223-97", July 9, 1997.
4. Letter report, Sr. Principal Engineer for Environmental Protection SSOC to President SSOC, "Chemical Evaluation", May 15, 1997.
5. Draft Management Plan for Material Contained in Idle Equipment, Revision 2, 94-MP/IE-0017.
6. Appendix 1 (of reference 6.), Idle Equipment with Hazardous Materials Inventory.
7. Draft Compliance Order on Consent, No. 97-00-00-01, CDH/DOE and K-H, "Idle Equipment".
8. Letter, Executive Vice President and COO K-H to Direct Reports, "Review of Tanks and Storage Containers RET-033-97", June 9, 1997.
9. Draft Kaiser Hill Chemical Management Manual.
10. Letter, President RMRS to K-H Manager of Closure Projects and Integration, "Review of Tanks and Storage Containers ACC-025-97", July 3, 1997.
11. Letter, K-H Manager of Closure Projects and Integration to President RMRS, "Review of Tanks and Storage Containers AMP 077-97", June 20, 1997.
12. Letter, President SSOC to Vice President K-H Nuclear Operations, " Review of Tanks and Storage Containers RFB 223-97", July 9, 1997.
13. Database, "B-371/374 Tank Systems", SSOC B-371 Environmental Compliance.
14. Letter, K-H Vice President Safeguards, Security, Site Operation and Integration to Senior Vice President/ General Manager DCI, "Tank and Storage Container Inspection MDB-329-97", June 16, 1997.
15. Draft SSOC "Building 771 Tank System Disposition Trade Study, Revision 0", May 29, 1997.
16. SSOC Presentation, "Building 771 Closure Project", January 2, 1997.
17. SSOC Presentation, "B-771 Closure Project Planning".
18. RMRS "Comprehensive Tank Management Plan, Revision 0", February 1997.

IV. Discussion of Results with Basis:

(Document the results of the review in sufficient detail using both the review criteria and the expectation statement as guidance.)

References 1,8,11 and 14 document direction to the sub-contractors to promulgate the Safety Alert and to assess their hazardous chemical inventories in storage and in tanks.

On July 8, 1997 DCI responded (Ref. 2) with the results of their assessment. DCI had reviewed the ICMS data base for the presence of HAN and found none in their custody. The DCI review of 175 approved chemical storage locations, revealed no safety concerns. Although DCI has no specific

Assessment Form 1

Date: 7-14-97

Assessment Form 1 No: PFP-1
Review Area: Plutonium Finishing Plant Explosion
Responsible Individual: Milton Haas

responsibility for the site's many storage containers, they did an assessment of 205 cargo containers and transferred 79 others to RMRS. A variety of problems were encountered during this wall-to-wall assessment including; cargo containers containing unauthorized chemicals in storage, some with other regulatory concerns, some that could not be located, others without identification number, etc. DCI has established a corrective action plan to remediate these deficiencies, they are also proposing to take management control of the site's cargo containers. DCI has concluded that, based on their assessment, there are no known unmitigated safety concerns.

References 3 and 4 document the results of SSOC evaluations conducted immediately after the Hanford event and following the formal request for action by K-H. The first assessment was conducted to quickly determine if HAN, Hydrazine or similar chemicals were present in tanks within the RFETS facilities being managed by SSOC. This initial review concluded that there were no tanks containing these chemicals, but that 105 gallons of HAN was stored in B-771 for future use in the +3 oxalate precipitation process which was once intended to stabilize high level plutonium solutions. That flowsheet has been abandoned in favor of Hydroxide precipitation and accordingly the inventory of HAN was disposed of off-site on June 20, 1997. Another 1 gallon of HAN was subsequently located in B-559 which had been procured as a reagent and is now being disposed of. There is no explanation for why the initial query of the ICMS database overlooked this gallon container. HAN has not been historically used as a process chemical at RFETS. It had, however, been utilized in research and development as well as in the analytical laboratory. There are other strong oxidizers and acids being stored and managed by SSOC in these facilities. These include; Hydrogen Peroxide, Aluminum Nitrate, Nitric Acid, Hydrochloric Acid, Hydrofluoric Acid and Sulfuric Acid.
The subsequent assessment evaluated the ICMS inventory, the historical use of HAN, a walk down of chemical makeup areas, the status of chemical vulnerabilities from the 1994 Headquarters assessment, the Tomsk II report and interviews with former facility personnel. The sole recommendation resulting from this evaluation was that Chemical Control Administrators (CCA's) should be able to update the ICMS tank data base to ensure that it is kept current. The evaluation had found errors in the data base that could have been avoided. Findings relative to the Tomsk II report for the Rocky Flats Plant (June 21, 1994) reiterated the concern over nitrated ion exchange resin, which is being dealt with , by cement fixation, in the B-774 Bottle box. A second potential Tomsk issue was the storage of waste organic in B-771. That material had in 1994 been excluded from consideration based on the volume limitation. The waste volume is 4 liters, significantly beneath the reporting threshold of 25 liters. Based on sample results and the low temperature of the former process, this material is considered stable until ultimate disposal as a part of the Liquid Stabilization Program.
No additional actions were identified by this SSOC evaluation the results of which were formally transmitted to K-H (reference 12).
SSOC utilizes the ICMS database, has it's own facility tank data bases and has equipment (including tanks) on the K-H Idle Equipment list. These databases encompass 4 major categories of tanks; Idle Equipment, Mixed Residue, Permitted and Product tanks. In addition, as a part of the B-771 Closure Planning (reference 17), SSOC is in the process of thoroughly characterizing the facility, tanks, gloveboxes, ductwork, etc. This information will feed into a Facility Database. Once B-771 closure planning is complete, SSOC will apply the same methodology to other former processing facilities. The Facility Databases will form the baseline for each closure project.

Details of the RFETS Idle Equipment Program can be found in the draft references 5 and 6. The site is being driven toward a Consent Order (reference 7) with the State of Colorado as a result of the change in the site's mission and the resultant legacy of chemicals in tanks. The draft management plan (a precursor to the Consent Order) provides a methodology for identifying idle equipment containing material or waste and for prioritizing the draining based on the reduction of risk to worker health, safety and the environment. The management plan is scheduled for release on August 15, 1997. In the interim, the site has been active in the identification and characterization of material, assessment and

Assessment Form 1

Date: 7-14-97

Assessment Form 1 No: PFP-1
Review Area: Plutonium Finishing Plant Explosion
Responsible Individual: Milton Haas

categorization of hazards and the management of the wastes. The idle equipment data base is being controlled by K-H. Following the hazards assessment, 4 risk categories were established. No equipment was relegated to the high risk category 1. All category 2 equipment is inspected bimonthly and all category 3 equipment is posted with warning and action signs. The current status of remediation of equipment containing hazardous materials is, 253 identified, 151 drained and flushed, 16 funded for FY97, 53 managed under the Liquid Stabilization Program (SSOC) and 33 deferred until D&D. Two of these 33 are tanks and have dry residues only.

Rocky Mountain Remediation Services (RMRS) has responsibility for ~600 of the 2800 tanks on-site including ; underground and aboveground storage tanks (typically containing diesel fuel and other relatively benign materials), Permitted tanks (typically containing waste waters), Interim Status Tanks (that are either in the Closure Process or being otherwise permitted), and they act as a technical resource to SSOC on the mixed residue tank system closure plan. As such, at least half of the RMRS inventories in tanks are well characterized and the contents are well known to the site and the regulators. RMRS has developed and issued a Project Plan for Above Ground Tank Management (reference 18).

During it's review, RMRS did find an entry for HAN on the ICMS database, inspection of the container in B-881 revealed that the container was empty. RMRS is in the process of confirming the contents of 270 of it's tanks, this will be completed as Phase 1 by the end of July. The balance, ~330 tanks, could be characterized for reactivity in a Phase 2, however, this effort would require additional resources and may not be justified due to the likely benign nature of their contents.

RMRS does have responsibility for a large number of Cargo Containers, some of which contain or potentially contain hazardous chemicals. All Cargo Containers within RMRS storage areas outside of the Protected Area were inventoried approximately 2 years ago and explosive chemicals were subsequently dealt with. A program is currently underway to address all "unknown" Cargo Containers (including those recently having been assigned to RMRS by DCI). This effort will be completed by the end of FY98.

All of the existing TRU and TRU-M waste drums have been vented. New drums are being fitted with a filtered vent as they are filled. Approximately 100 LLW-M drums that were deemed to be of high risk for gas generation have also been vented. This information and additional detail was transmitted to K-H (reference 10).

V. Conclusion:

(Concluding statement based on the discussion of results. The statement should conclude whether the criteria of the objective was met. All issues should be documented on Assessment Form 2.)

All contractors responsible for the management of hazardous chemicals were well aware of the May 14 event at Hanford's Plutonium Finishing Plant. The DOE-Headquarters Safety Alert was rapidly disseminated via the Integrating Contractor to his sub-contractors via formal memoranda. Those communications also directed the sub-contractors to take appropriate actions and to provide a response. Rocky Flats had early notification of the event as a result of numerous former Hanford personnel in the ranks of and within the management of RMRS and SSOC. As a result of that early warning, considerable activity was underway at the site on May 15 to ensure that no similar potential scenario existed at RFETS.

The thrust of this segment of the RFFO assessment of it's contractors was to determine if the contractors had taken appropriate and thorough actions to ensure that mixtures of HAN and Nitric acid or other similar reactive chemicals/mixtures, if present, were being safely managed. Of greatest concern would be explosive compounds or mixtures contained within tanks or other equipment inside of an MAA in the proximity of radioactive materials with particular emphasis on shut-down facilities

Assessment Form 1

Date: 7-14-97

Assessment Form 1 No: PFP-1
Review Area: Plutonium Finishing Plant Explosion
Responsible Individual: Milton Haas
or those in transition to deactivation and D&D. This assessors conclusion is that Kaiser-Hill and it's subcontractors reacted appropriately to the DOE-Headquarters Safety Alert and the RFFO request for action. This assessor examined the actions taken by the contractors and the conclusions derived from those actions. Although the appropriate actions were taken or have been initiated there is an issue that the systems in place at RFETS are sufficiently new and in some cases too fragmented to ensure that a potential adverse condition has not been overlooked. That issue will be detailed and substantiated as an assessment "observation" in the attached Form 2. All criteria for this objective were met. No findings were noted.

Originator _____ Date 7-15-97

Approved _____ Date 7/18/97

Assessment Form 2

OBSERVATION

Date:7-17-97

Assessment Form 2 No.: PFP-1.1
Review Area: PFP-1
Responsible Individual: Milton Haas

I. Identification Section

The systems used to ensure that no potential adverse conditions exist in tanks at RFETS are either new, in development or are fragmented.

II. Basis Section

In the search for HAN/Nitric Acid mixtures or other potentially reactive chemicals/mixtures, the site must refer to a variety of databases. RFETS believes that it has 2800 tanks. The ICMS chemical database lists chemicals and some tanks, the Idle Equipment List details equipment, tanks, sumps, etc., facilities such as B-771 and B-371 have tank databases. ICMS is new and in development, Facility Databases (as a part of the closure process) will eventually replace the existing facility databases. No individual interviewed was confident that these databases were all encompassing and they were unsure of overlap between the various systems. K-H recognizes this issue and had intended to conduct a TANK SUMMIT to consider means to ameliorate the fragmentation of data and the concomitant uncertainties.

Please refer to Form 1 reference Numbers 6, 9, 13, 15 and 17. Individuals interviewed included Chemical and Tank Management representatives from K-H, DCI, SSOC, and RMRS.

III. Approval Section (Signatures)

Originator _____ Date 7-15-97

Approved _____ Date 7/16/97